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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/678,601	10/03/2003	Franz-Josef Stark	CEDE 2118.1	6149

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SENNIGER POWERS
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EXAMINER

BAREFORD, KATHERINE A

ART UNIT	PAPER NUMBER
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1762

NOTIFICATION DATE	DELIVERY MODE
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06/22/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspatents@senniger.com

Office Action Summary	Application No. 10/678,601	Applicant(s) STARK ET AL.	
	Examiner Katherine A. Bareford	Art Unit 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-66 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 48, 49, 52, 53, 59, 61 and 66 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.
claims 1-47, 50, 51, 54-58, 60 and 62-65 are canceled

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) ☒ Notice of References Cited (PTO-892) | 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) ☐ Notice of Informal Patent Application |
| 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) ☐ Other: _____ |

DETAILED ACTION

1. The amendment of June 1, 2007 has been received and entered. With the amendment, claims 1-47, 50, 51, 54-58, 60 and 62-65 have been canceled, and claims 48, 49, 52, 53, 59, 61 and new claim 66 are pending for examination.

Specification

2. The amendment filed December 30, 2003 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

(1) the amendment to page 6, in the paragraph beginning "The starting concentration", to change 0.15 mol/L to "0.16 mol/L" is not supported by the original English language application as filed (as of October 29, 2003) and applicant has not provided how it would be supported by the German language filing of October 3, 2003.

(2) the amendment to page 10, to replace Example 1 with the provided Table is not supported by the original English language application as filed (as of October 29, 2003) and applicant has not provided how it would be supported by the German language filing of October 3, 2003.

Applicant is required to cancel the new matter in the reply to this Office Action.

3. In the amendment of June 1, 2007, applicant refers to page 9 of the German language specification October 2003 as supporting the change to page 6, and to page 13 of the German language specification of October 2003 as supporting the change to page 10. The Examiner has reviewed these arguments, however, the rejection is maintained. Applicant has provided no translation comparing the German language specification excerpts with the proposed changes and no indication as to why the originally October 29, 2003 English specification was provided with a translation error or other mistake, given that the October 29, 2003 English language specification provided was supposed to be a translation of the October 3, 2003 German language specification.

4. The objection to the specification as failing to provide proper antecedent basis for the claimed subject matter is withdrawn as to claims 57 and 58 as these claims were canceled in the June 1, 2007 amendment.

Claim Rejections - 35 USC § 112

5. The objection to claims 50, 57 and 58 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention is withdrawn due to the cancellation of all these claims in the June 1, 2007 amendment.

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

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The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 48, 49, 52, 53, 59, 61 and 66 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 48, has been amended June 1, 2007 to provide that "wherein during electroless deposition, the electrolyte is buffered to a self-regulating pH between about 4.3 and about 6.2". Applicant points to paragraph [0024] of the specification for the self-regulating basis and paragraphs [0051] – [0051] (apparently meaning [0052]) of the specification for the pH range (the Examiner understands the paragraph numbers to refer to the USPGPub of this application). The Examiner has reviewed the disclosure as originally filed. Paragraphs [0051] – [0052] describe using baths with a pH ranges of 4.3 and 6.2. However, it does not support "about" 4.3 and "about" 6.2. Moreover, paragraph [0024] describes self-regulating with respect to a pH range of 4.0 to 5.2, preferably 4.3 to 4.8, not to the entire range of about 4.3 to about 6.2 now claimed. Therefore, the amendment contains new matter.

The other dependent claims do not cure the defects of the claims from which they depend.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 48, 49, 52, 53, 59, 61 and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over GB 1 243 134 (hereinafter '134) in view of Martyak et al (US 5258061) and Zhong et al (US 6106927).

'134 teaches a method for electroless deposition of nickel layers. Page 2, lines 10-25. The layers would have internal compressive stresses, since metal is applied. Deposition can be from an electrolyte solution comprising a nickel metal base salt, a reducing agent, a complexing agent, an accelerator and a stabilizer. Page 2, lines 25-65

and page 3, lines 50-60. '134 teaches that uniform metal layers can be deposited at a steady high deposition rate of 8.89 micrometer/hour, for example. Page 4, lines 30-36 and 85-90 (0.35 mil/hr = 8.89 micrometer/hour). The throughput can be 15-20 MTO, for example 15 MTO. Page 4, lines 35-40 and 100-105. '134 teaches that the nickel metal base salt of the electrolyte can be a nickel metal salt whose anions are volatile (nickel acetate). Page 2, lines 90-95. The initial concentration of metal ions can be 0.119 mol/L, with the specification teaching providing maintaining the concentration at 0.0935 and 0.153 mol/L, preferably approx. 0.119 mol/L, for example. Page 2, lines 110-115 and page 4, lines 79-90. The pH of the bath is desirably fairly constant at 4.5 to 4.7. Page 2, lines 115-125. The complexing agent is described as a glutamic acid or its water soluble salts. Page 2, lines 25-40. While the claim refers to other "optionally" provided components, these are not required to be present.

Claim 49: the metal salt can be nickel acetate. Page 2, lines 90-95.

Claim 52: a makeup solution is added to the electrolyte while practicing the method. Page 3, lines 95-110. The makeup solution can include reducing agent and an alkaline buffered complexing agent. Page 3, lines 105-130 and page 4, lines 1-20. '134 also provides the use of accelerators in the bath. Page 2, lines 55-65.

Claim 53: makeup solutions will be needed to be added from time to time and thus first and second makeup solutions will be added. Page 3, lines 95-105.

Claim 59: the reducing agent can be sodium hypophosphite. Page 2, lines 50-55.

Claim 61: the concentration of complexing agent ions is at least twice that of the nickel ions, and the nickel ions can be at 0.079 to 0.189 mol/L (In example 1, 0.321 mol/L of complexing ions is provided by 60 g/L of monosodium glutamate monohydrate). Page 2, lines 60-70 and page 4, lines 75-75.

'134 teaches all the features of these claims except (1) the exact deposition rate of nickel using nickel acetate, (2) the exact initial concentration of the nickel metal base salt, (3) the complexing agent of 2-hydroxypropanoic acid or propanedioic acid, (4) the buffering of the electrolyte to a self-regulating pH of between 4.3 and 6.2, (5) the accelerator in the makeup solution (claim 52), (6) the exact amount of complexing agent concentration (claim 61) and (7) the exact throughput (claim 66).

Martyak teaches that it is well known to provide nickel electroless plating solutions, containing water soluble nickel salts, a reducing agent such as hyphosphite, a chelating agent (complexing agent) and a stabilizing agent. Column 2, lines 10-65. Conventional chelating (complexing) agents that can be used equivalently are "lactic acid" (another name for 2-hydroxypropanoic acid) and "glutamic acid". Column 2, lines 25-30.

Zhong teaches that it is well known to provide nickel electroless plating solutions containing nickel salts, such as nickel acetate, reducing agent such as hypophosphite and complexing (chelating) agent such as lactic acid. Column 4, line 45 through column 5, line 25. The baths can also contain stabilizing agents and rate promoters (accelerating

agents). Column 5, lines 15-25. The pH of the bath is desirably 4-5, such as 4.43-4.83 and buffering agents can be provided. Column 5, lines 5-25.

It is the Examiner's position that it is well known in the art of electroless plating to provide buffering agents in order to make a bath self regulating in pH. If applicant disagrees, he should so state on the record in response.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to (1) modify '134 to optimize the deposition rate when using nickel acetate by routine experimentation, which would result in deposition in the claimed range, as '134 teaches that deposition rates that can be in claimed range (Example 1) and that the deposition rate can be optimized by varying conditions of the plating (see Examples 3, 4 and 5). Since, as discussed in MPEP 2144.05, "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955), it would have been obvious to one of ordinary skill in the art to optimize the deposition rates, which are shown to be a result-effective variable by '134. (2) It would further have been obvious to modify '134 to optimize the initial concentration of the nickel metal base salt by routine experimentation to give the desired amount of nickel initially provided in the bath, given that '134 teaches a range of desired nickel concentration that overlaps with the claimed range of applicant, and that the initial concentration would be included in the desired nickel concentration in general, and, as discussed in MPEP 2144.05, "In the case where the claimed ranges

"overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976)". (3) It would further have been obvious to modify '134 to use a complexing agent of 2-hydroxypropanoic acid (lactic acid) as suggested by Martyak in order to provide a desirable plated article, because '134 teaches to use glutamic acid as a complexing/chelating agent when nickel plating and Martyak teaches that lactic acid and glutamic acid can be equivalently used as a complexing/chelating agent when nickel plating and thus would be expected to have equivalent results. (4) It would further have been obvious to modify '134 in view of Martyak to buffer the solution to a self-regulating pH of between 4.5 and 4.7, for example, as suggested by Zhong with an expectation of providing a desirably stable and easy to use bath for plating, because '134 in view of Martyak teaches a nickel electroless plating bath with a desirable pH range of 4.5 to 4.7 (which is entirely within the range claimed by applicant) and Zhong teaches that when providing nickel electroless plating baths, it is well known to provide buffering agents in the bath and control it to a desired pH, and furthermore, it is well known that buffering agents are used to make an electroless bath self regulating, and thus, do not need constant monitoring. (5) It would further have been obvious to modify '134 in view of Martyak and Zhong to provide an accelerator in the makeup solution in order to provide a replenished bath that mimics the conditions of the originally bath, because '134 teaches that when providing the original bath, it can be desirable to have an accelerator in the bath and also to provide makeup solutions to

replenish the bath. (6) It would further have been obvious to modify '134 in view of Martyak and Zhong to optimize the exact amount of the complexing agent used in the plating solution by routine experimentation, which would result in g/L concentration of the complexing agent in the same range as claimed, because '134 provides that the concentration of complexing agent ions is at least twice that of the nickel ions, and the nickel ions can be at 0.079 to 0.189 mol/L, and in example 1, 0.321 mol/L of complexing ions is provided by 60 g/L of monosodium glutamate monohydrate). Since, as discussed in MPEP 2144.05, "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955), it would have been obvious to one of ordinary skill in the art to optimize the complexing agent amounts, which are shown to be a result-effective variable by '134. (7) It would further have been obvious to modify '134 in view of Martyak and Zhong to optimize the throughput amount of the nickel in g/L used in the plating solution by routine experimentation, which would result in g/L nickel throughput in the same range as claimed, because '134 provides that the concentration of nickel ions in bath is preferably 6.0 to 7.0 g/L and that this concentration is replenished during plating (page 3, lines 100-110) and '134 also teaches that the bath can be replenished 15-20 times (page 4, lines 35-40), thus for example, if 7.0 g/L was replenished 15 times (7×15) 105 g/L would be used during the process. Since, as discussed in MPEP 2144.05, "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the

optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955), it would have been obvious to one of ordinary skill in the art to optimize the amount of nickel used in the range of g/L from the ranges of nickel and cycles used provided by '134.

11. The rejection of claims 54-55 under 35 U.S.C. 103(a) as being unpatentable over '134 as applied to claims 48-53 and 59-61 above, and further in view of Dutkewych et al (US 3876434) is withdrawn due to the cancellation of the claims 54-55 in the amendment of June 1, 2007.

12. The rejection of claims 56-57 under 35 U.S.C. 103(a) as being unpatentable over '134 as applied to claims 48-53 and 59-61 above, and further in view of McCormick et al (US 4293089) is withdrawn due to the cancellation of the claims 56-57 in the amendment of June 1, 2007.

13. The rejection of claims 56 and 58 under 35 U.S.C. 103(a) as being unpatentable over '134 as applied to claims 48-53 and 59-61 above, and further in view of Sickles (US 3060059) is withdrawn due to the cancellation of the claims 56 and 58 in the amendment of June 1, 2007.

14. The rejection of claims 62-63 under 35 U.S.C. 103(a) as being unpatentable over '134 as applied to claims 48-53 and 59-61 above, and further in view of GB 2 231 063 (hereinafter '063) or Japan 57-043978 (hereinafter '978) is withdrawn due to the cancellation of the claims 62-63 in the amendment of June 1, 2007.

15. The rejection of claim 64 under 35 U.S.C. 103(a) as being unpatentable over '134 as applied to claims 48-53 and 59-61 above, and further in view of Crotty (US 6391177) is withdrawn due to the cancellation of the claim 64 in the amendment of June 1, 2007.

Response to Arguments

16. Applicant's arguments with respect to claims 48, 49, 52, 53, 59, 61 and 66 have been considered but are moot in view of the new ground(s) of rejection.

New reference Martyak has been provided as to the newly claimed specific limitation as to the complexing agent. New reference Zhong as been provided as to the newly claimed specific limitation as to self regulating buffered pH. As to the argument that '134 teaches away from self-regulating pH, the Examiner disagrees. While '134 teaches that acids can be used to adjust the pH during continuous plating, this does not mean that a self-regulating bath cannot be provided. The adjustment is (a) merely optional, and (b) not required to be continuous.

Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) with the First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Other inquiries can be directed to the Tech Center 1700 telephone number at (571) 272-1700.

Furthermore, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information

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for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


KATHERINE BAREFORD
PRIMARY EXAMINER